

Mr. Dave Holm
Water Quality Control Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Dr., S.
Denver, CO 80222-1530

Mar. 30, 1996

Dear Mr. Holm:

Enclosed are some comments on the consent decree and proposed discharge permit for the Sunnyside Gold Corporation operations outside of Silverton Colorado. My comments are in regard to Appendix A: Reference Water Quality.

On page 4.a, Sunnyside is allowed to make statistical adjustments, "Should new, adverse effects on dissolved Zinc values in the Upper Animas Basin occur through man-made or natural causes that are not caused by closure activities of the Sunnyside Mine or mitigation activities carried out by Sunnyside under this agreement." What happens if other activities not related to Sunnyside's actions reduce the dissolved zinc values? The Animas Stakeholders Group is planning such activities this summer. Sunnyside should not get credit for these other activities.

To help insure that Sunnyside does not receive credit for this other work, all of Sunnyside remediation sites must be monitored. This includes the Eureka site for which monitoring is currently not planned.

In addition, the method for statistical comparison of pre-project activities versus post-project activities greatly concerns me. The method includes breaking concentration data points at A72 into three categories based on flow measurements. Using the method, the number of samples Sunnyside is required to collect post-project and assuming the post-project samples have the same standard deviation in each flow category as the pre-project samples, I find some disturbing results. The mean concentrations of zinc post-project, in the middle to high flow categories, could be more than 20% greater than the pre-project mean concentrations and still be in compliance with the agreement.

For example, the mean concentration of the middle flows before the project is 399 micrograms per liter. The post-project mean concentration could be 490 micrograms per liter, and Sunnyside would still have met the comparison criteria.

It should be noted that although zinc concentrations at middle and higher flows are much lower than during low flows, they are no less toxic. Zinc toxicity is inversely related to hardness. During high flows, the hardness drops dramatically and zinc toxicity increases at lower concentrations.

The attached graph depicts the relationship. The solid line is the toxicity concentration for many forms of aquatic life, given the hardness concentrations on the horizontal axis. The hardness is inversely related to flow. The dashed line shows metal concentrations measured at A72 corresponding to the hardness concentrations and flow on the horizontal axis.

The state needs to reduce the margin of difference between the pre- and post project mean concentrations required to fulfill the agreement. This could be done either by not dividing concentration levels into three categories or by requiring a much larger number of samples to be analyzed after project completion in each flow category. Additionally, the state should increase pre-project data by using any A72 data that has been collected since last September and by sampling more middle to high flows this spring before the American Tunnel is closed.

While I am supportive of the concept behind this agreement, I am becoming much less supportive of the actual agreement because of the problems described above.

Regards,

A handwritten signature in cursive script that reads "Peter Butler".

Peter Butler, Ph.D

Director

Friends of the Animas River

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